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BENEFICIAL EFFECTS OF EARLY STATIN TREATMENT ON MICROVASCULAR DYSFUNCTION AND LEFT VENTRICULAR REMODELING IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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Purpose: Several studies have shown that impaired myocardial flow reserve (MFR) during early after the onset of myocardial infarction (MI) relates to left ventricular (LV) remodeling. The aim of this study was to elucidate the early effect of statin treatment on the microvascular dysfunction and LV remodeling in patients with acute MI.

Method: Thirty-five patients with successful reperfusion following AMI (29 men, mean 64 years) were assigned to either statin group (group S; n=17) or non-statin group (group NS; n=18). In Group S , 6 patients had received statin treatment before the onset and 11 patients received statin treatment at mean 3 days after the onset. 13N-ammonia positron emission tomography with adenosine tri-phosphate was performed to assess MFR in the infarct-related area (IRA) and non-infarct-related area (NIRA) at mean 14 days after the onset. LV end-diastolic volume index (LVEDVI) and LV ejection fraction (LVEF) were calculated using left ventriculography at 6 months after the onset.

Results: There were no differences in the peak creatinine kinase (Group S vs. Group NS; 3547 ± 2678 mg/dl vs. 3680 ± 3518 mg/dl, p = NS.) and the defect score on 99mTc-tetrofosmin myocardial perfusion imaging (25.6 ± 11.9 vs. 25.8 ± 12.9, p = NS.) between the two groups. The mean MFR in the IRA was significantly higher in group S than group NS (2.41 ± 0.58 vs. 1.89 ± 0.54, p = 0.0103) as well as that in the NIRA (2.72 ± 0.74 vs. 2.23 ± 0.63, p = 0.0428). In chronic period, the difference was not observed in the LVEF between the two groups. However, Group NS patients had greater LVEDVI at 6 months than group S (88.6 ± 34.2 mL/m2 vs. 59.5 ± 13.9 mL/m2, p = 0.0042). Moreover, the MFR in the IRA and NIRA were correlated inversely with the LVEDVI at 6 months (r = -0.463, p = 0.0067, and r = -0.372, p = 0.0333, respectively). Among group S patients, their MFR in the IRA and NIRA did not differ between patients who had received statin treatment before the onset and those who had not.

Conclusion: Early Statin treatment may provide beneficial effects in terms of attenuating LV remodeling after MI, which may be associated with improved global microvascular dysfunction.